

WHAT IS CLAIMED IS:

1. An image forming apparatus comprising:
a detachable first process cartridge for forming a
5 first color toner image on a recording medium;

a detachable second process cartridge for forming a
second color toner image on the recording medium after the
formation of the first color toner image on the recording
medium;

10 first detection means for detecting an amount of toner
used by the first process cartridge during color image
formation; and

determination means for estimating an amount of first
color toner mixed into the second process cartridge based
15 on the amount of toner detected by the detection means and
determining when it is time to replace the second process
cartridge based on the estimated amount of first color toner
mixed into the second process cartridge.

20 2. The image forming apparatus of claim 1, further
comprising a second detection means for detecting an amount
of toner causing deterioration inside the second process
cartridge,

wherein the determination means determines that it
25 is time to replace the second process cartridge whenever
a defective toner amount exceeds a predetermined value,

the defective toner amount being the sum of the amount

of first color toner mixed into the second process cartridge based and the amount of toner causing deterioration inside the second process cartridge.

5 3. The image forming apparatus according to claim 2, wherein:

the second process cartridge has a memory for storing one or more parameters relating to the defective toner amount; and

10 the determination means has means for storing the one or more parameters relating to the defective toner amount in the second process cartridge memory,

wherein the determination means reads out the one or more parameters relating to the defective toner amount from
15 the second process cartridge memory to obtain the defective toner amount.

4. The image forming apparatus according to claim 2, wherein the second detection means for detecting the
20 amount of toner causing deterioration inside the second process cartridge detects such toner amount based on utilization of the second process cartridge.

5. The image forming apparatus according to claim
25 2, wherein the second detection means for detecting the amount of toner causing deterioration inside the second process cartridge detects such toner amount from a rotation

speed and length of time of rotation of a development roller included in the second process cartridge.

6. The image forming apparatus according to claim 1, wherein the first detection means determines the amount of toner used by the first process cartridge during color image formation from an amount of image data in the image formed by the first process cartridge.

7. A control method for controlling an image forming apparatus having a detachable first process cartridge for forming a first color toner image on a recording medium and a detachable second process cartridge for forming a second color toner image on the recording medium after the formation of the first color toner image on the recording medium, the control method comprising:

a detection step of detecting an amount of toner used by the first process cartridge during color image formation; and

a determining step of estimating an amount of first color toner mixed into the second process cartridge based on the amount of toner detected in the detection step and determining that it is time to replace the second process cartridge based on the estimated amount of first color toner mixed into the second process cartridge.

8. A cartridge that can be detachably attached to

a color image forming apparatus that forms an image using
a plurality of color toners, the cartridge comprising:

a toner container for holding toner; and

a storage unit for storing information relating to
5 an amount of unusual toner included in said toner container.

9. The cartridge according to claim 8, wherein the
unusual toner includes off-color toner in the toner
container and/or degraded toner in the toner container.

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10. The cartridge according to claim 8, wherein the
amount of unusual toner is the sum of the amount of off-color
toner included in the toner container and an amount of
degraded toner included in said toner container.

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11. The cartridge according to claim 8, wherein the
storage unit further comprises a storage area for storing
a table that correlates a print data amount of said image
forming apparatus and the unusual toner amount included in
20 the toner container of the image forming apparatus.

12. The cartridge according to claim 8, further
comprising a developer member for developing the toner in
said toner container onto an image carrier of the image
25 forming apparatus.

13. A memory device loaded into a cartridge used in

an image forming apparatus that uses a plurality of color
toners to form an image, the image forming apparatus
including an image carrier, a toner container holding toner,
and a developer member for developing the toner in the toner
5 container onto the image carrier, memory device comprising
a storage area for storing information related to an amount
of unusual toner in the toner container.

14. The memory device according to claim 13, wherein
10 the unusual toner includes off-color toner in the toner
container and/or degraded toner in the toner container.

15. The memory device according to claim 13, wherein
the unusual toner amount is the sum of the off-color toner
15 amount in the toner container and an amount of toner of a
color different from the color of the toner in said toner
container.

16. The memory device according to claim 13, further
20 comprising a storage area for storing a table that
correlates a print data amount of said image forming
apparatus and the unusual toner amount included in the toner
container of the image forming apparatus.

25 17. The memory device according to claim 13, wherein
the cartridge includes at least said toner container.